

SUBSTITUTE FORM PTO-1390		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 07217/001001
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO (IF KNOWN) Unknown 114875
INTERNATIONAL APPLICATION NO. PCT/GB97/01513	INTERNATIONAL FILING DATE 4/6/97 (4 Jun. 1997)	PRIORITY DATE CLAIMED 4/6/96 (4 Jun 1996)	
TITLE OF INVENTION ELECTRONIC DEVICE			
APPLICANT(S) FOR DO/EO/US PAUL MARTIN KENNY, JOHN KONSTANDELOS, MARK WHITEHEAD			
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:</p> <ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <input checked="" type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <p>Items 11. to 16. below concern other documents or information included:</p> <ol style="list-style-type: none"> <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. <input type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input type="checkbox"/> A change of power of attorney and/or address letter. <input checked="" type="checkbox"/> Other items or information: <p>Check for \$420.00 Postcard</p>			

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U.S. APPLICATION NO. (IF KNOWN)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NUMBER	
Unknown		PCT/GB97/01513		07217/001001	
17. ■ The following fees are submitted:				CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)):					
Search report has been prepared by the EPO or JPO \$ 840					
International preliminary examination fee paid to USPTO (37 CFR 1.482).... \$ 0					
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))..... \$ 0					
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO..... \$ 0					
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2) to (4)..... \$ 0					
ENTER APPROPRIATE BASIC FEE AMOUNT				\$ 840.00	
Surcharge of \$130 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 mos from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 00.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
TOTAL CLAIMS	10 - 20	0	x \$ 22	\$ 00.00	
INDEPENDENT CLAIMS	2 - 3	0	x \$ 82	\$ 00.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260	\$ 00.00	
TOTAL OF ABOVE CALCULATIONS				\$ 840.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed will follow. (Note 37 CFR 1.9, 1.27, 1.28.)				\$ 420.00	
SUBTOTAL				\$ 420.00	
Processing fee of \$130 for furnishing the English Translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 mos. from the earliest claimed priority date (37 CFR 1.492(f))				\$ 00.00	
TOTAL NATIONAL FEE				\$ 420.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31).				\$ 00.00	
TOTAL FEES ENCLOSED				\$ 420.00	
				Amount to be refunded	
				Charged	
a. ■ A check in the amount of \$420.00 to cover the above fees is enclosed.					
b. <input type="checkbox"/> Please charge my Deposit Account No. 06-1050 in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. ■ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1050. A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
William J. Egan, III FISH & RICHARDSON P.C. 225 FRANKLIN STREET BOSTON, MA 02110-2804					
SIGNATURE					
Bao Q. Tran					
12/4/98					
Reg. No. 37,955					

63 Rec'd PCT/PTO 04 DEC 1998

09/194875 PATENT
ATTORNEY DOCKET NO. 07217/001001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Paul Martin Kenny, et al. Art Unit: Unassigned
Serial No.: Unassigned Examiner: Unassigned
Filed : December 4, 1998
Title : ELECTRONIC DEVICE

Assistant Commissioner for Patents
Washington, DC 20231
Box PCT

TRANSMITTAL LETTER


Applicant submits the following in connection with a U.S. national phase filing of PCT/GB97/01513.

1. PTO-1390 Transmittal Letter to DO/EO
2. Copy of parent application PCT/GB97/01513
3. International Preliminary Examination Report
4. Check for \$420.00
5. Postcard

If there are any charges not covered, or any credits, please apply them to Deposit Account 06-1050.

Respectfully submitted,

Date: 12/4/98


Bao Q. Tran
Reg. No. 37,955

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Date of Deposit December 4, 1998

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Paul Martin Kenny, et al. Art Unit: N/A
Serial No.: 09/194,875 Examiner: N/A
Filing Date: 12/4/98
Title : ELECTRONIC DEVICE

**PETITION UNDER 37 C.F.R. § 47 AND FOR ONE-MONTH
EXTENSION OF TIME**

Commissioner for Patents
and Trademarks
Box PCT
Washington, DC 20231

Dear Sir:

In response to the Notification of Missing Requirements Under 35 U.S.C 371 in the United States Designated/Elected Office (DO/EO/US), attached is a Declaration of the Inventors and the applicable surcharge of \$130.00 for providing the Oath or Declaration. Additionally, a Verified Statement of Facts relating to Mr. Paul Kenny's refusal to sign the Declaration is attached, along with supporting documentation.

Pursuant to 37 CFR §1.136, Applicants hereby petition that the period for response to the action dated April 21, 1999 be extended for one month to and including June 21, 1999.

"EXPRESS MAIL" Mailing Label Number EL110518115US

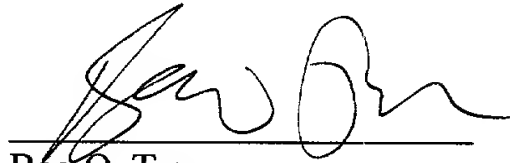
Date of Deposit 21 June 1999

Enclosed is a check for \$110.00 for the required fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date:

6/21/99



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ELECTRONIC DEVICE

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This invention relates to an electronic device having an enclosure for electronic circuits for the suppression of spurious unwanted emissions such as harmonic emissions from electronic circuit components and discontinuities and, more particularly, to enclosures for suppressing or substantially reducing the emission of unwanted electromagnetic radiation whilst concurrently allowing the emission of wanted electromagnetic radiation.

Electronic circuits, and in particular microwave circuits, are used in a variety of applications, for example, they are commonly employed in motion detection units for detecting a moving person or object by means of a Doppler frequency shift. A motion detector is arranged to emit electromagnetic radiation at particular frequencies via a given aperture, that is to say, a motion detector is an intentional radiator of electromagnetic radiation.

All electronic circuits generate and radiate spurious emissions which can exceed a maximum level set by current EMC regulations. In order to conform to current EMC standards, any spurious emissions from circuit components and discontinuities having frequencies which fall outside an allocated frequency band must be

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suppressed. Circuit elements or devices, for example, dielectric resonator oscillators and mixers, which are typically used in motion detection units, can generate significant levels of harmonic emissions. These
5 emissions can leak out through the mechanical joints between, for example, the enclosure and the circuit board of the microwave motion detection unit...

DE-3 515 910 discloses an enclosure for a high frequency
10 electronic circuit. The electronic circuit has an extension to which an external connection can be made. The enclosure comprises a chamber which accommodates the extension for suppressing electromagnetic emissions therefrom.

15

Circuits are therefore often housed in enclosures which act as shields to prevent unwanted emissions radiating into free space.

20 These enclosures are usually made of a conducting material such as aluminium or brass, or metal coated plastic. A conducting mesh can also be used providing that the apertures in the mesh are small enough to prevent the emissions from escaping. Enclosures can also
25 be made of an absorbing material to absorb the emissions. Alternatively, a plastic material loaded with metal filings or granules can be used to confine emissions to the enclosure.

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High frequency emissions are more difficult to screen because they can escape through small gaps in the enclosure, for example, where the cover and the main enclosure joins, or at cable entry points.

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Figure 1 shows a perspective view of a known motion detector 1. A frame 5 is used to clamp a printed circuit board 2 to the main enclosure 6. The circuit side of the printed circuit board faces inwards into the enclosure. 5 The conducting groundplane of the printed circuit board is outward facing. A printed antenna is attached to the groundplane and is coupled to the circuit via a slot in the groundplane. Printed circuit board 2 has a solder tab 3. In order to accommodate solder tab 3, a slot is 10 cut into a side wall of frame 5 in order to allow the tab to pass through. A ribbon cable 9 is soldered to tab 3.

The gap between the circuit board 2 and one side of the slot in frame 5 is sealed by means of gasket 7 to 15 block emissions. The gap between the circuit board and the other side of the slot has been minimised, but some clearance, gap 8, is necessary to prevent lines or components on the printed circuit board from being short circuited by either frame 5 or main enclosure 6. Gap 8 20 provides a path for unwanted emissions to radiate into free space.

In the present invention, an improved method of suppressing unwanted radiated emissions, such as 25 microwave or RF emissions, from an electronic circuit such as a microwave circuit and/or antenna circuit is provided wherein:

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In a preferred embodiment, the first and second portions are adapted to provide a chamber about the connection means.

5 Preferably, the second frame portion comprises an extension sized and shaped to substantially surround the upstanding connection means. Preferably, the extension is sized and shaped to clear the upstanding connection means. The extension may comprise an outwardly extending
10 recess in a peripheral wall of the second frame portion. Preferably, the peripheral wall of the frame, including the recess, is continuous, that is, the peripheral wall and the recess are formed in an integral manner. The frame may comprise electromagnetic radiation absorbing
15 and/or reflecting material. Preferably, the frame is conducting.

In a further preferred embodiment, the first main portion comprises a projection extending from a wall of
20 the main portion. Preferably, the projection on the first main portion and the extension on the second frame portion are sized and shaped to form an electromagnetically sealed chamber about the extending connection means.

25

Preferably, the projection of the first main portion comprises one or more apertures through which a connection to the connection means can be made.

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Preferably, the aperture is sized and shaped to accommodate a cable, antenna feed, power source or the like. The cable may be a ribbon cable. The connection means may be adapted for connection to the cable,
5 antenna, power source or the like. The connection means may be a solder tab.

Preferably, the first main portion comprises electromagnetic radiation absorbing and/or reflecting
10 material. Preferably, the first main portion is conducting.

Preferably, the enclosure for the microwave circuit board is conductive and can be constructed in metal, such
15 as brass or aluminium, or be of a metal coated plastic. The enclosure could comprise a microwave absorbing material. A plastic material loaded with metal filings or granules could be used.

20 The enclosure can comprise an injection moulded cover, for example, of a metal loaded plastics material, the cover having an edge region conforming substantially to the edge of the microwave circuit board and being a close fit therewith. Any gaps between the peripheral
25 edge of the microwave circuit board and the peripheral edge of the enclosure are minimised.

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Microwave circuit components capable of radiating unwanted emissions include, for example, dielectric resonator oscillators, mixers and like components. Discontinuities in the printed or etched microwave circuit components, such as microstrip lines, can also give rise to unwanted emissions.

In a further preferred embodiment, the circuit board is a printed circuit board.

10

In a further preferred embodiment, the device is a microwave circuit device, preferably, an intrusion detection device, for example, a motion detection device.

15 A preferred embodiment of the invention will be described now, by way of example only, with reference to the following figures.

Figure 2 illustrates a perspective view of a frame for an electronic circuit device having an extension, seen from above.

25

Figure 3 illustrates the frame of figure 2, seen from below.

Figure 4 illustrates a perspective view of printed circuit boards, seen from above.

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an enclosure for the circuit having a chamber for suppressing various emissions is provided about connection means extending from a circuit board, for example, a solder tab; and/or

5 an enclosure for the circuit is provided having an aperture sized and shaped to be a close fit about an item to be connected to the circuit board such as a cable.

In a first aspect, therefore, the present invention
10 provides an electronic device comprising an enclosure for a circuit board bearing elements, for example, components and/or discontinuities, capable of radiating unwanted emissions, the circuit having at least one connection means extending from a surface or a periphery of the
15 board to which an external connection is to be made, the enclosure comprising only a first main portion and a second frame portion, the board being mounted there between, preferably, with an outwardly facing circuit groundplane outward facing;

20 at least one of either of the first or second portions comprising means for substantially surrounding the extending connection means;

whereby unwanted emissions generated by the electronic circuit are substantially prevented from
25 leaving the enclosure via a region adjacent to the connection means.

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Figure 5 illustrates a perspective view of a main enclosure for an electronic circuit, seen from above.

Figure 6 illustrates a perspective view of an electronic circuit, in this case a motion detector assembly, when fully assembled, seen from below.

Referring to figure 2, there is shown a frame 10 or first portion of an enclosure made of a electrically conductive material and having a continuous or integrally formed outer wall 10a. The enclosure is arranged to accommodate a circuit board bearing elements capable of generating undesired electromagnetic radiation. The outer wall 10a comprises an extension 11 for housing a circuit element which extends from said circuit board.

Referring now to figure 3, there is shown schematically a perspective view of the first portion view from below. It can be seen that extension 11 comprises a recess 12 in order to accommodate an extending connection means, for example, solder tabs or the like (not shown).

Figure 4 depicts a printed circuit board assembly 2 comprising a microwave circuit board 2c and having connection means in the form of a solder tab 8 extending outwardly from the periphery of the microwave circuit board 2c. An antenna circuit board 2a having an antenna

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printed thereon is also provided. The antenna circuit board and the microwave circuit board face in mutually opposite directions. When the printed circuit board assembly is mounted within the enclosure, the microwave circuit board 2c is inwardly directed whereas the antenna circuit board 2a is outwardly directed. The printed antenna is mounted on the back of printed circuit board 2c. A groundplane is disposed between the microwave circuit board 2c and the antenna circuit board 2a.

10

A solder tab 8 is provided to allow external connections to the microwave circuit board 2c, antenna circuit board 2a and the ground plane 2b, such external connection being used for the provision of signal cables, power cables and earth connection. The recess 12 in outer wall 10a of frame 10 is sized and shaped to substantially surround tab 8 without, in this preferred embodiment, coming into contact therewith. The lack of contact between the wall of the recess 12 and the solder tabs avoids short circuits between any circuit elements associated with or carried by the extending connection means. The outer wall 10a is continuous ie no slots, or other gaps, are provided in the frame wall which could result in unwanted leakage of emissions. Preferably, the outer wall is integrally formed by, for example, injection moulding.

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With reference to figure 5, a main or second part 13 of the enclosure is shown. Printed circuit board assembly 2 is mountable within the space 14 of the enclosure 13.

5

An outwardly extending projection 15 is provided in the wall of the second part of the enclosure 13 at a location corresponding to the location of solder tab 8 on circuit board 2. Projection 15 comprises at least one
10 aperture 16 arranged to snugly receive the cables for the external connections to the solder tab 8. Typically, the external connections are provided by using a ribbon cable. When assembled, solder tab 8 is positioned adjacent upper surface 17 of projection 15.

15

Referring now to figure 6 there is shown an assembled electronic device, for example, a motion detector, comprising the frame 10 and main enclosure portion 13. The printed circuit board assembly 2 is
20 housed within the chamber formed by the frame and the assembly. The frame 10, main enclosure portion 13 and printed circuit board 2 have been aligned prior to assembly so that projection 15, extension 11 and solder tab 8 are all substantially aligned to thereby prevent
25 the emission of unwanted radiation. As can be seen from figure 6, projection 15 snugly cooperates with the open aspect of recess 12 to so to form an electromagnetically sealed extension chamber within which solder tab 8 is

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located to prevent emission of em-radiation from within the chamber. The only access to solder tab 8 is via aperture 16 through which a ribbon cable, for example, can be located. The cable is a close, push fit within the spaced circular holes which form aperture 16. The holes can be cylindrical or tapered to ease insertion of the cable.

The printed circuit board 2 with groundplane facing outwards, is mounted in the main enclosure 13 and held in place by frame 10. The frame and the main enclosure in the vicinity of the solder tab, ie projection 15 and extension 11, are a close fit to substantially obviate or reduce emissions escaping through the joint. The solder tab is now completely enclosed in a chamber formed by the frame and the main enclosure.

Although there is still a path through the cable insulation, ie the outer part of the ribbon cable, by which emissions can escape, the actual gap between the cable conductor, ie the central part of the cable, and the enclosure is as a consequence of the snug fit smaller and hence unwanted emissions are significantly reduced.

It will be apparent to those skilled in the art from the information contained herein that the principle of shaping the aperture in the wall of an enclosure to minimise gaps through which cables pass, can be applied

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to cables with different cross sections or to items other than cables, such as components, antennas feeds and the like.

5 It will also be apparent to those skilled in the art that the preferred assembly is one in which the printed circuit board assembly is mounted within the enclosure with the component side facing inwards. The printed circuit board assembly is held in place by a frame. The
10 outer surface of the printed circuit comprises a groundplane so that the component side of the circuit is completely surrounded and emissions are confined to the enclosure. A printed antenna is attached to the back of the groundplane and coupling between circuits is achieved
15 via a slot in the groundplane.

However, the invention can be applied to other mechanical arrangements. For example, the printed circuit board can be completely encased within a chamber
20 consisting of a main enclosure and a separate cover. The assembly would not then be reliant on the circuit groundplane to act as a screen. Access to the circuit would be by a method similar to that used with the frame.

25 Indeed, the principle of providing an enclosure having a chamber, for absorbing, reflecting and/or otherwise suppressing emissions, about a connection means extending from a circuit board and/or providing an

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aperture sized and shaped to be a close fit about an item to be connected to the circuit board can be applied to other mechanical arrangements. All such alternative embodiments are intended to be within the scope of this application.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

20

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

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The invention is not restricted to the details of the foregoing embodiments. The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any
5 accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

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CLAIMS

1. An enclosure (10, 13) for an electronic device having an electronic circuit board (2) for suppressing emissions from a connection means (8) extending from the electronic circuit board (2), the enclosure being characterised by a first main enclosure portion (10) having an outer wall (10A) comprising a recess (12), and
- 10 a second part (13) arranged to cooperate snugly with an open aspect of the recess (12) to form an electromagnetically sealed extension chamber for housing the connection means (8), at least one of either the first portion (10) or second
- 15 part (13) comprising a projection (15) having at least one aperture (16) to receive a cable (9) for connection to the connection means (8).
2. An enclosure as claimed in claim 1, wherein at least one of either the frame portion and the main enclosure portion is electromagnetically continuous and is preferably integrally formed.
- 20
3. An enclosure as claimed in any preceding claim, wherein at least one of either the frame portion and the main enclosure portion comprise electromagnetic radiation absorbent and/or reflective material.
- 25

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4. An enclosure according to any preceding claim,
wherein the frame portion is conductive.
5. An enclosure as claimed in any preceding claim,
5 wherein the first main enclosure portion comprises
a projection having one or more apertures through
which connection to the connection means can be
made.
- 10 6. An enclosure as claimed in any preceding claim,
wherein the first main enclosure portion is
conductive.
- 15 7. An enclosure as claimed in any preceding claim,
wherein the connection means is adapted for
connection to a cable, power source, antenna feed or
the like.
- 20 8. An enclosure as claimed in any preceding claims,
wherein the connection means comprises at least one
solder tab.
- 25 9. An enclosure as claimed in any preceding claim,
wherein the electronic circuit board is operable at
least one of either RF or microwave frequencies.
10. A intruder detection device, preferable a motion
detector, for intentionally radiating

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electromagnetic radiation of a selectable frequency,
said motion detector comprising an enclosure
according to any preceding claim for suppressing
frequencies other than said selectable frequency.

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ABSTRACT

The invention relates to electronic circuit devices, and more particularly to the suppression of spurious unwanted emissions from electronic circuit components and discontinuities. The device comprises an electronic circuit board having components and discontinuities capable of radiating unwanted emissions, the circuit having at least one connection means to which an external connection is to be made, the connection means may extend from a surface or periphery of the board, the device also comprising an enclosure for the board, the enclosure having a first main portion and a second frame portion, the board being mounted there between, the first and second portions being adapted to provide a chamber about the upstanding connection means and/or having an aperture sized and shaped to provide a close fit about a cable or the like to be connected to the connection means, whereby unwanted emissions from the electronic components and/or discontinuities are substantially prevented from leaving the enclosure via a region adjacent to the connection means.

SCANNED. # 12

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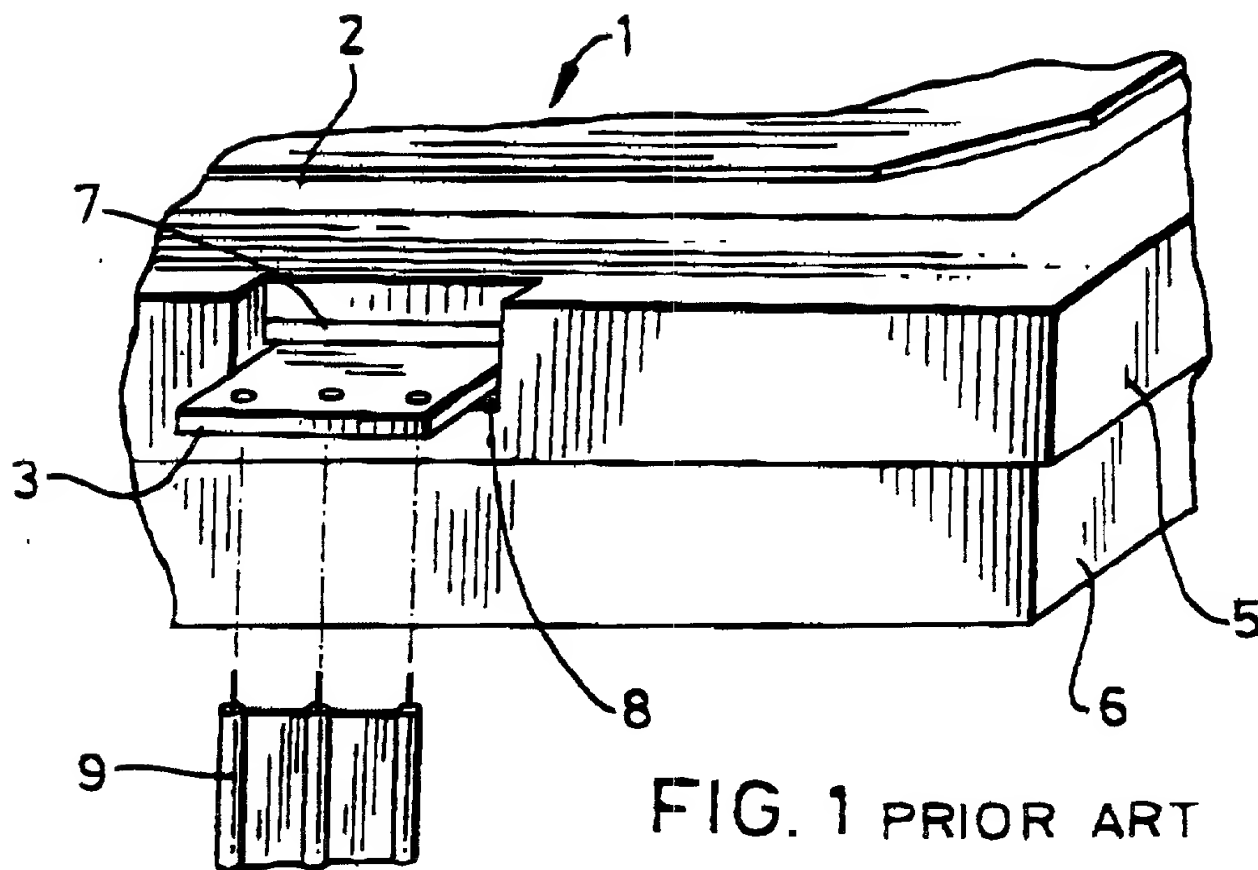


FIG. 1 PRIOR ART

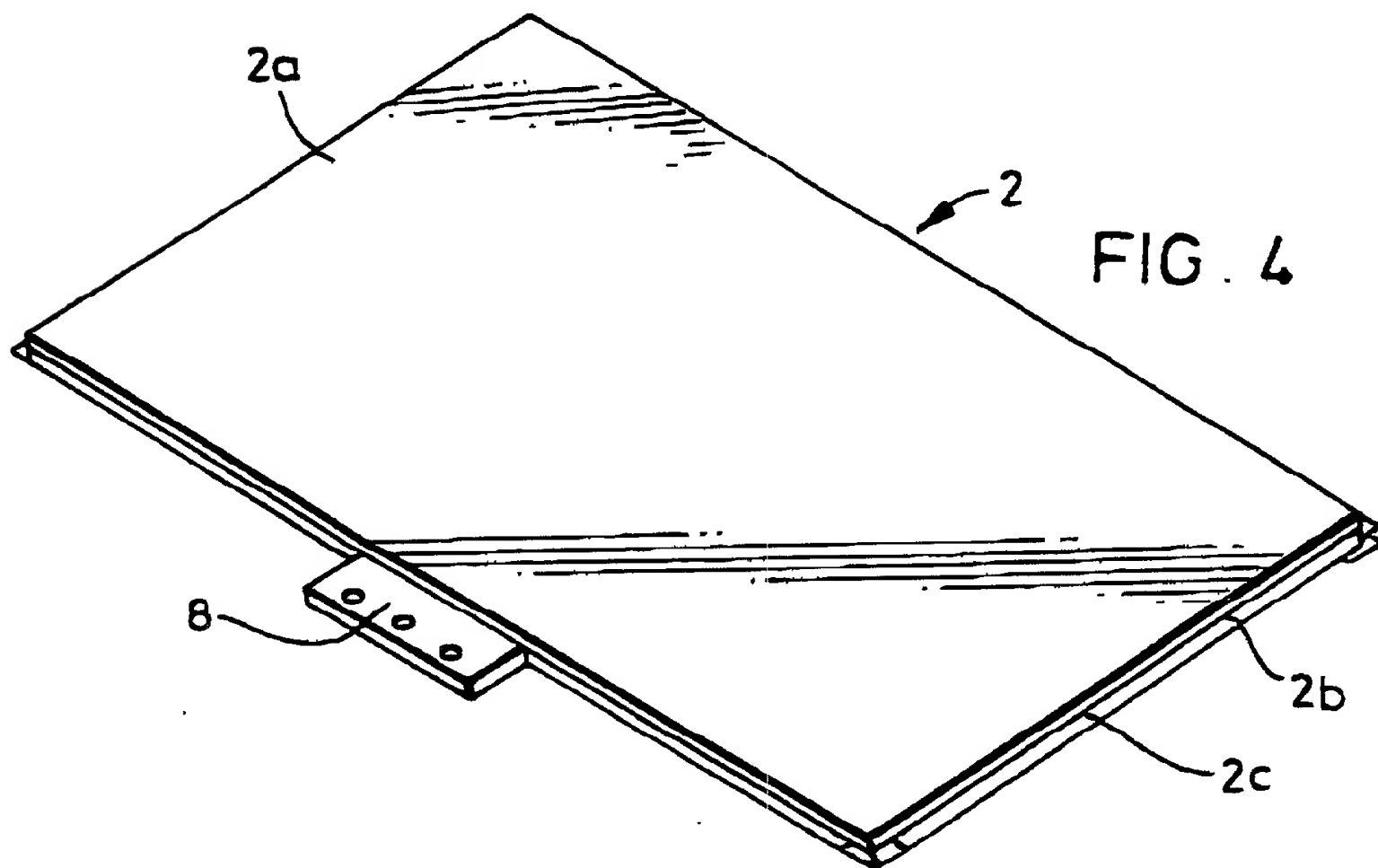


FIG. 4

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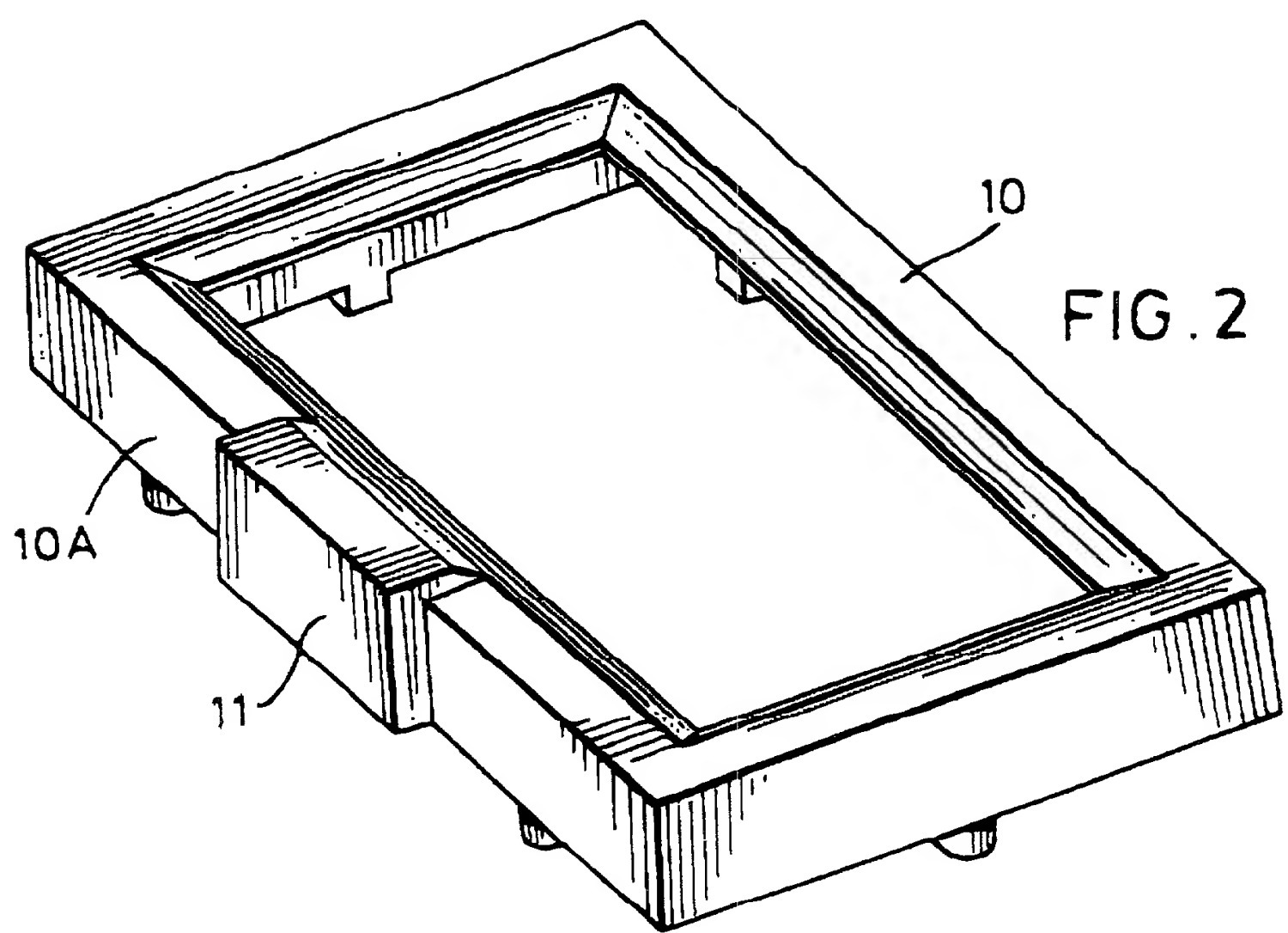


FIG. 2

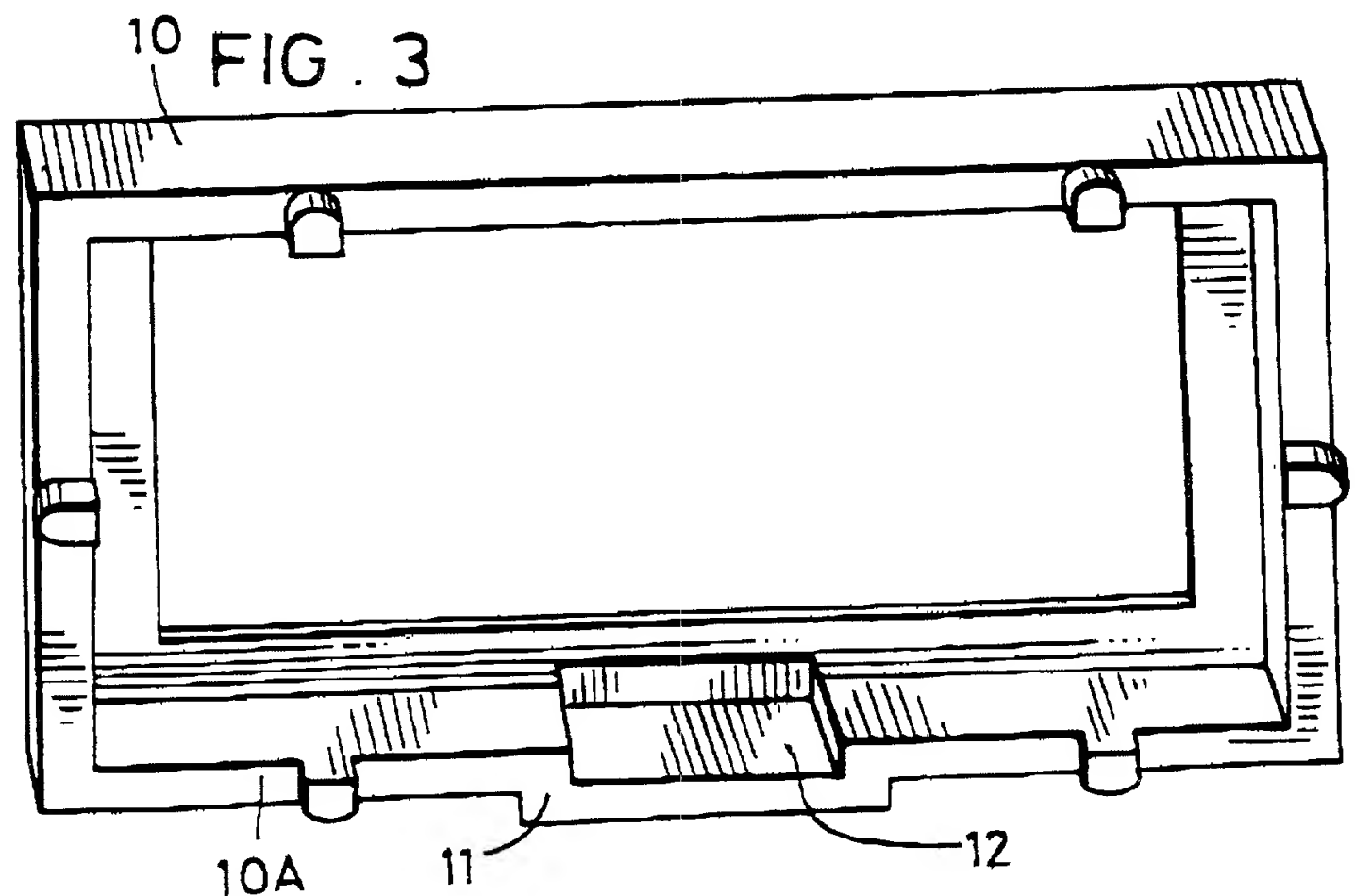


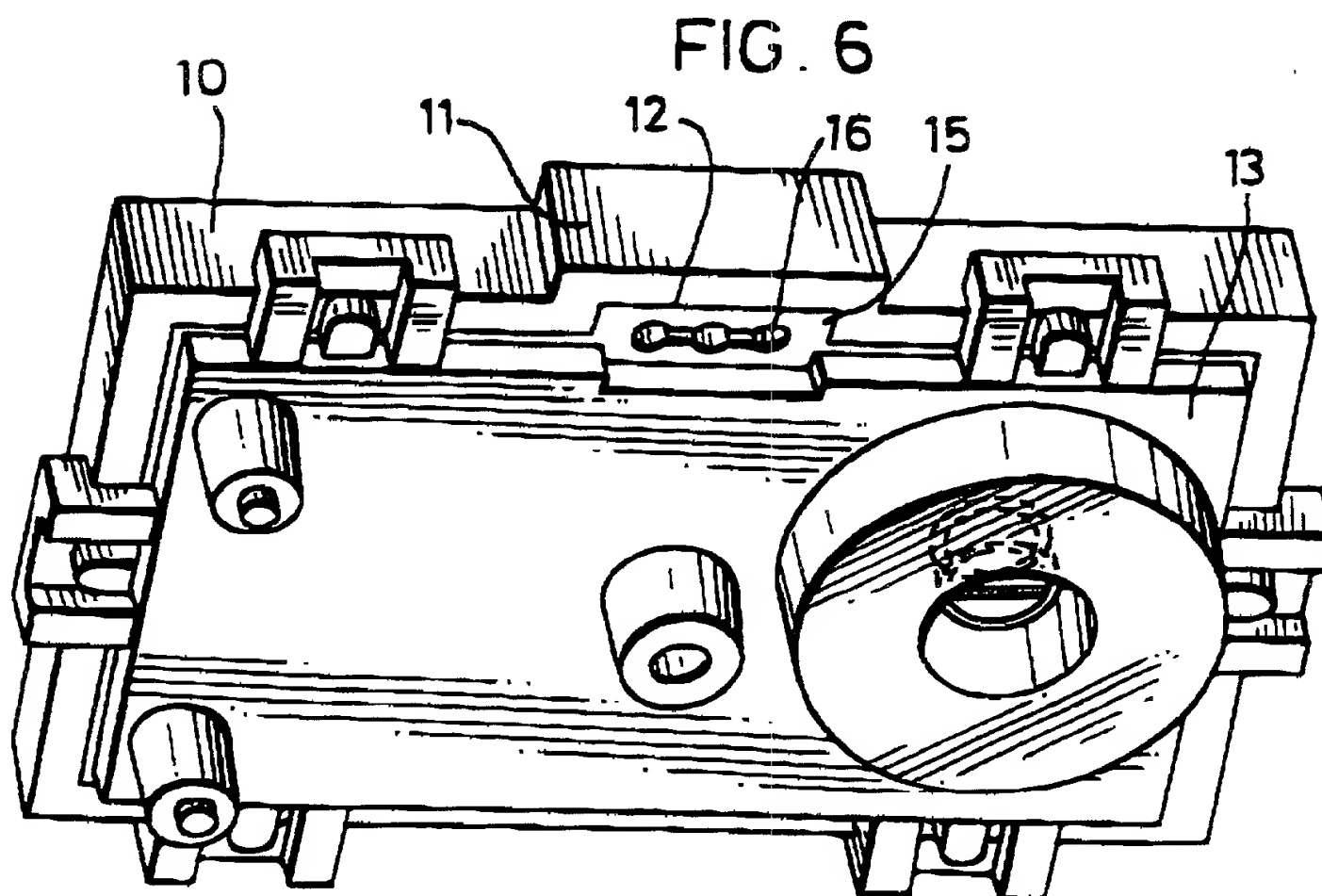
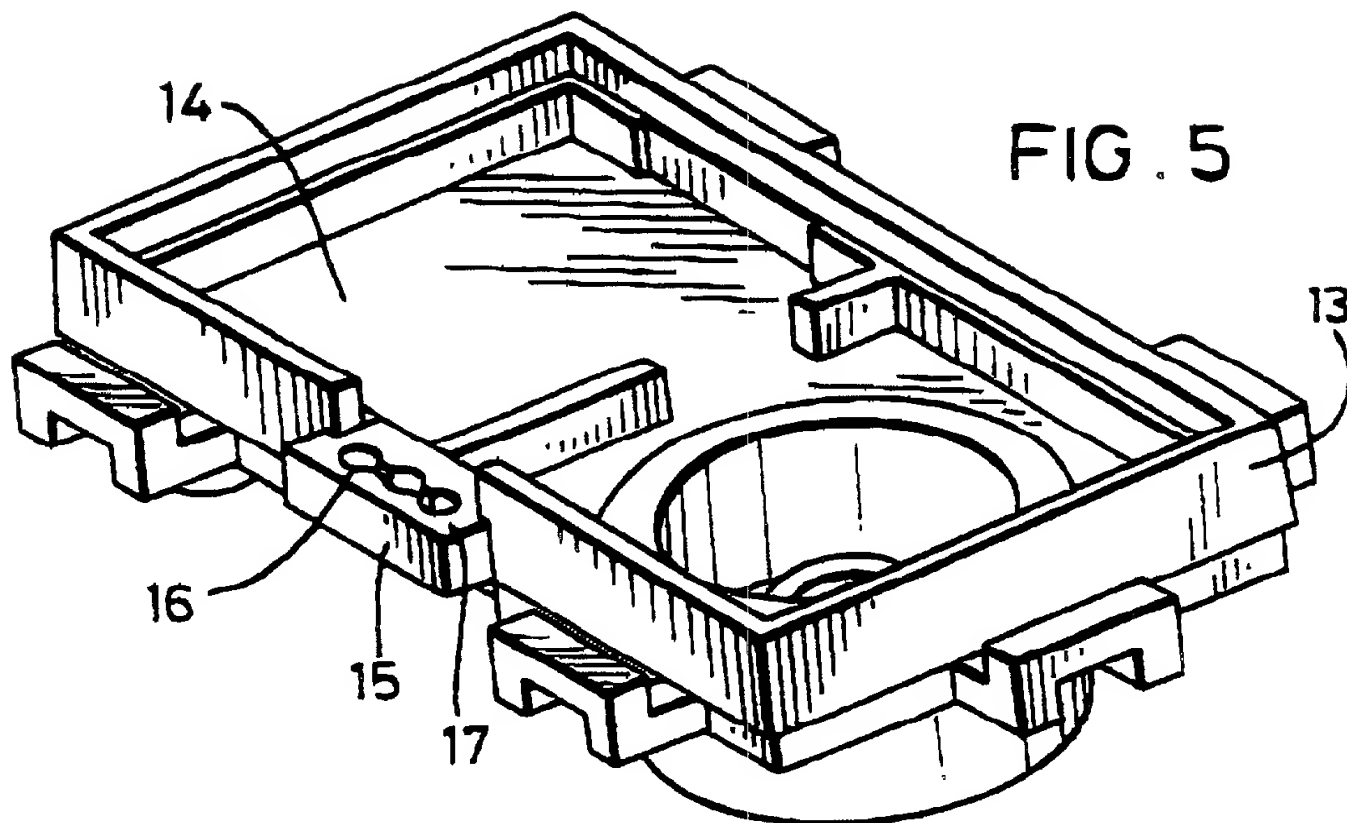
FIG. 3

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PATENT
ATTORNEY DOCKET NO: 07217/012001

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled, the specification of which is attached hereto.

X was filed on December 4, 1995 as Application Serial No. 09/194,575
and was amended on _____

X was described and claimed in PCT International Application No. PCT/GB97/01513 filed on 6/4/97

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

COUNTRY	APPLICATION NO.	FILING DATE	PRIORITY CLAIMED
PCI/GB	PCT/GB97/01513	6/4/97	Yes

I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: William J Egan III, Reg. No 28411, David J Goren, Reg. No. 34,609

Address all telephone calls to William J Egan III at telephone number 650/322-5070.

Address all correspondence to William J Egan III, Fish & Richardson P.C., 2200 Sand Hill Road, Suite 100, Menlo Park, CA 94025.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full Name of Inventor: Paul Martin Kenny

Inventor's Signature: [Signature] Date: 5/03/02

Residence Address: Bromsgrove, Worcester, B62 7NR, United Kingdom

Citizen of: United Kingdom

Revised August 22, 1994 (S)1000000000

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15. MAR. 2002 15:18

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NO. 979 P. 4/27

COMBINED DECLARATION AND POWER OF ATTORNEY CONTINUEDPost Office Address: 37 St Andrews Way, Bromsgrove, Worcester, BS2 7NR, United KingdomFull Name of Inventor: John KonstantelosInventor's Signature: J. KonstantelosDate: 15/3/02Residence Address: Doncaster, United KingdomCitizen of: United KingdomPost Office Address: 15 Crossways, Doncaster, DN2 5SL, United KingdomFull Name of Inventor: Mark WhiteheadInventor's Signature: M. WhiteheadDate: 15/3/02Residence Address: Rotherham, United KingdomCitizen of: United KingdomPost Office Address: 4 Harvest Close, Maltby, Rotherham, S66 5NZ, United Kingdom

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